WHAT IS CLAIMED IS:

1. A method for inspecting defects in a wafer, the method comprising:

acquiring at least one digitized image of at least one portion of a wafer;

converting at least one design database file corresponding to the portion of the wafer into at least one inspection file;

setting one or more error detection thresholds; and

comparing the digitized image and the inspection file by an inspection tool for detecting defects with regard to the portion of the wafer based on the set error detection thresholds.

2. The method of claim 1 wherein the design database file is processed with optical proximity correction features.

3. The method of claim 1 wherein the converting further includes converting the design database file to an aerial image format.

4. The method of claim 3 wherein further includes converting

the database file from the aerial image format to an inspection file format.

5. The method of claim 1 further comprising bias fitting the digitized image and/or the converted inspection file to render both files to be comparable by the inspection tool.

6. The method of claim 1 further comprising detecting a proximity trend with the portion of the wafer.

7. The method of claim 1 wherein the defects include mask patterning induced defects.

8. The method of claim 1 wherein the defects include wafer processing induced defects.

9. The method of claim 1 wherein the defects include circuit layout induced defects.

10. A method for inspecting mask patterning process induced defects in a wafer, the method comprising:

acquiring at least one digitized image of at least one mask pattern

on the wafer;

converting at least one mask database file for a mask corresponding to the mask pattern into at least one inspection file specific to an inspection tool through an aerial image based processing;

comparing the digitized image and the inspection file by the inspection tool; and

detecting disallowed mask patterning process induced defects by examining differences.

11. The method of claim 10 wherein the detecting further includes detecting defects induced by one or more processes using the mask.

12. The method of claim 10 wherein the detecting further includes detecting defects induced by a mask writer while making the mask.

13. The method of claim 10 wherein the detecting further includes detecting defects induced by a mask blank substrate.

14. The method of claim 10 wherein the detecting further includes detecting proximity trends of the mask pattern.

15. A method for inspecting wafer processing induced defects for making a semiconductor device, the method comprising:

acquiring at least one digitized image of at least one feature on the wafer;

converting at least one design database file corresponding to the feature into at least one inspection file specific to an inspection tool through an aerial image based processing;

comparing the digitized image and the inspection file by the inspection tool; and

detecting disallowed wafer processing induced defects by examining differences between the inspection file and the digitized image corresponding to the feature.

16. The method of claim 15 wherein the defects includes critical dimension errors.

17. The method of claim 15 further includes information about critical dimension distribution.

18. The method of claim 15 further comprising bias fitting the digitized image and/or the inspection file.

19. The method of claim 15 wherein the detecting further includes setting on or more error detection thresholds for avoiding false defects.

20. A method for inspecting circuit layout related defects for making a semiconductor device, the method comprising:

acquiring at least one digitized image of at least one feature on the wafer;

converting at least one circuit design database file corresponding to the feature based on one circuit layout design into at least one inspection file through an aerial image based processing;

comparing the digitized image and the inspection file by the inspection tool; and

detecting disallowed circuit layout related defects by examining differences thereof.